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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In the Application of: John W. Evans, et al.

Art Unit: 1751

Examiner: Hamlin, D.

on: Non-Aqueous Heat Transfer
Fluid and Use Thereof

Serial No.: 09/910,497

Filed On: July 19, 2001

(Docket No. 290397.0007)

Dated at Hartford, Connecticut this 20th day of January, 2003

Commissioner for Patents
Washington, D.C. 20231

RESPONSE TO OFFICE ACTION

Dear Madam/Sir:

In response to the Office Action mailed on August 19, 2002, Applicants respectfully request reconsideration of the above-referenced application for the reasons set forth below.

In the Office Action dated August 19, 2002, the Examiner rejected all of the pending claims, claims 1-29 and 40-50 as amended, under 35 U.S.C. §103(a) over Maes et al., U.S. Patent No. 5,366,651. Applicant respectfully requests reconsideration of this grounds for rejection.

As set forth in claims 1-29 and 40-50 as amended, the present application is directed to a non-aqueous heat transfer fluid having reduced toxicity. As set forth in amended Claim 1, the heat transfer fluid comprises ethylene glycol, at least one additional diol which acts as an inhibitor for ethylene glycol poisoning, and at least one corrosion inhibitor additive that is soluble in ethylene glycol and the additional diol. As set forth in amended claims 4, 5, 13, and 15 - 24, in one embodiment, the additional diol which acts as an inhibitor for ethylene glycol poisoning is propylene glycol. As further set forth in amended claims 27 - 29 and 40 - 50, the present application is also directed to methods for reducing the toxicity of existing ethylene glycol based fluids by adding a second diol, such as propylene glycol, which reduces the toxicity of the ethylene glycol based fluid.

As described in the specification at, inter alia, pages 11 and 14-15 and as recited in the amended claims, the heat transfer fluid of the present invention is used as a coolant without the addition of any water. As described in the specification at, inter alia, pages 15-17, the heat transfer fluids of the mixtures described and claimed in the present application exhibit the necessary physical properties, such as, for example, viscosity and vapor pressure, to function effectively in most applications. Moreover, as described in the specification at, inter alia, pages 18-21, the non-aqueous heat transfer fluids of the present invention unexpectedly exhibit a reduced oral toxicity than would be predicted based upon the oral toxicity of the major components, such as ethylene glycol or propylene glycol.

Maes does not teach or suggest combining ethylene glycol with a second diol for any purpose, much less for the purpose of forming a non-aqueous heat transfer fluid having reduced toxicity. Maes is directed to a corrosion inhibitor for use in aqueous solutions, and to antifreeze/coolant compositions containing such a corrosion inhibitor. See Maes at Col. 1, line 8. Maes states that the invention described therein “is directed to a novel corrosion inhibitor composition for use in aqueous systems, an antifreeze/coolant concentrate containing the inhibitor composition and aqueous antifreeze/coolant compositions containing the inhibitor composition.” See Maes at Col. 2, lines 54-58. Thus, Maes is directed primarily toward the corrosion inhibitor used in aqueous antifreeze/coolants. As set forth in the Maes specification and the claims, Maes describes a fluid for use in aqueous solution comprising “a water soluble liquid alcohol freezing point depressant and a corrosion inhibitor comprising carboxylic acids or their salts and a triazole compound” Maes at Col. 2, lines 62-65 (emphasis added). See also Maes at Col. 9, lines 25-26 (claim 1 directed to a concentrate comprising “a water soluble freezing point depressant”)(emphasis added). Accordingly, Maes describes a composition having a single water soluble liquid freezing point depressant.

In the Office Action, the Examiner erroneously states that Maes describes an antifreeze concentrate comprising water-soluble liquid alcohol freezing point depressants, i.e. that Maes describes combinations or mixtures of water-soluble liquid alcohol freezing point depressants. The Examiner’s erroneous reading of Maes is based entirely on a single passage at Col. 3, line 65 to Col. 4, line 8. In this passage, Maes lists alcohol freezing point depressants which may be used in the aqueous antifreeze composition described in Maes. This passage does not teach or suggest combining ethylene glycol with a second diol for any purpose, much less to form a non-aqueous, reduced toxicity heat transfer fluid as described in the present application and claimed in amended claims

1-26. In addition, Maes does not teach or suggest a method to reduce the toxicity of ethylene glycol based fluids by adding a second diol, such as propylene glycol, to form a heat transfer fluid having reduced oral toxicity as set forth in amended claims 27-29 and 40-50.

The Examiner's erroneous reading of Maes is a result of reading the passage cited above out of context. When considered in view of the Maes reference as a whole, this passage in Maes cannot support a rejection under section 103. At column 3, line 65 through column 4, line 8, Maes provides a listing of water-soluble alcohols that may be used in the invention. Maes refers to "depressants" in the plural only in the context of introducing the listing of substances that may be used in the compositions described in Maes. Even in this passage, Maes does not teach or suggest using combinations or mixtures of more than one alcohol freezing point depressant. For example, Maes does not state that combinations or mixtures of the listed substances could be used in the compositions described in the patent.

Moreover, other than the one short passage cited by the Examiner, throughout the remainder of the specification and claims, Maes refers solely to the use of a single water-soluble liquid alcohol freezing point depressant in the anti-freeze compositions described therein. When read in the context of the specification and the claims, it is plain that Maes teaches only the use of a single alcohol freezing point depressant. Other than the one short passage cited by the Examiner, throughout the remainder of the Maes specification, and in claim 1, the only independent claim, the composition is described by Maes as containing "a water soluble alcohol freezing point depressant." (emphasis added). All of the 16 examples provided by Maes contain only ethylene glycol as the alcohol freezing point depressant.

A rejection under 35 U.S.C § 103 cannot be based on a single passage taken out of context without considering the remainder of the specification. The Courts have held that “it is impermissible within the framework of section 103 to pick and choose from any one reference only so much of it as will support a given position, to the exclusion of other parts necessary to the full appreciation of what such reference fairly suggests to one of ordinary skill in the art.” In re Wesslau, 353 F.2d 238, 147 U.S.P.Q. 391 (CCPA 1965). See also Bausch & Lomb, Inc. v. Barnes-Hind/Hydrocurve, Inc., 796 F.2d 443, 230 U.S.P.Q. 416 (Fed. Cir. 1986), cert. denied, 484 U.S. 823 (1987). When Maes is considered as a whole, as required when using the reference in the context of 35 U.S.C. § 103, it is clear that Maes does not teach or suggest to one skilled in the art the combination of any water soluble alcohol freezing point depressants, much less the combinations claimed in the present application.

Moreover, Maes does not teach or suggest any mixtures of diols to reduce the toxicity of the resulting coolant. As set forth in the specification at page 18-21, one of the advantages of the present invention is that the toxicity of the coolant composition was unexpectedly lower than that expected from mixing ethylene glycol with other diols. Maes does not teach or suggest any combination of ethylene glycol with propylene glycol, much less teach or suggest the combinations described in the specification and set forth in the amended claims. Accordingly, a person skilled in the art would not be motivated by anything in Maes to combine ethylene glycol and propylene glycol in any particular ratio, much less in the amounts described in the specification and amended claims.


Nor does Maes describe, or otherwise teach or suggest, addition of a diol to ethylene glycol based fluids to reduce the toxicity of the fluid as set forth in the methods of amended claims 27-29 and 40-50.

For at least the reasons set forth above, Applicants respectfully request that the rejection based on Maes be withdrawn, and that claims 1-29 and 40-50 be allowed.

A petition for a two month extension of time and associated fee extending the time to respond to Office Action from November 19, 2002 to January 19, 2003 has been filed herewith. As January 19, 2003 was a Sunday, the Request for Continued Examination and this Response is timely filed on January 20, 2003. No additional fee is believed to be required. However, if an additional fee is required or otherwise necessary to cover any deficiency in fees paid, authorization is hereby given to charge our Deposit Account No. 50-1631.

Respectfully submitted,

Date: January 20, 2003


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